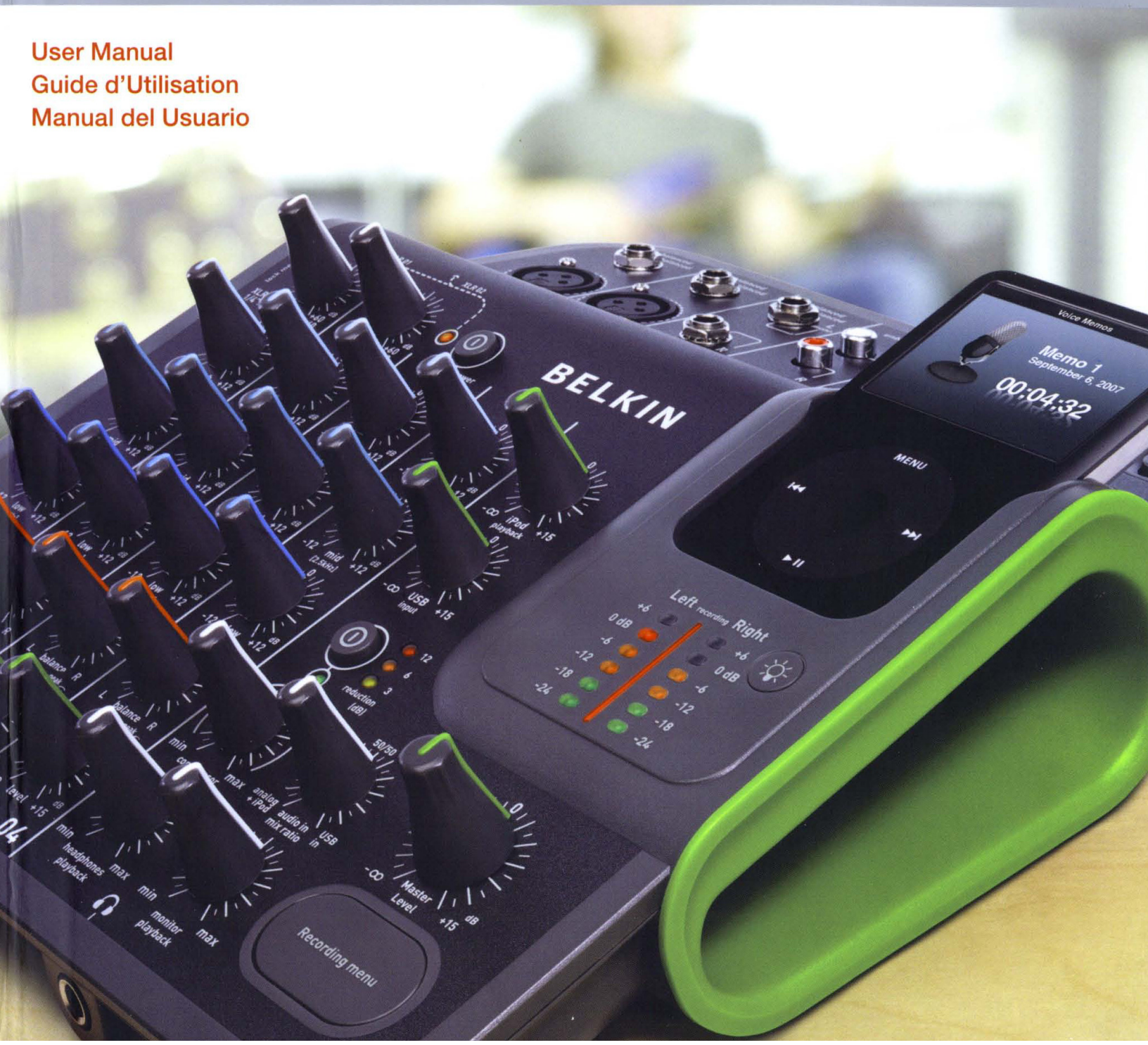
BELKIN

TUNESTUDIO™

User Manual
Guide d'Utilisation
Manual del Usuario



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WELCOME

Thank you for purchasing a TuneStudio iPod recording studio.

We designed TuneStudio for a wide range of users, from novice podcasters to experienced musicians. It's compact, portable, and sturdy enough to stand up to life in a rehearsal room. Its shape gives you easy access to the controls and simplifies cable management. The iPod docking cradle keeps your iPod secured in a position that allows convenient and comfortable access to the screen and click wheel.

Your TuneStudio will help you make the most of the high-quality recording capabilities of the iPod. You can connect up to four instruments or audio sources. Each audio input channel includes equalization (EQ), pan, and level controls. Input channels 1 and 2 can also provide a gain control and optional phantom power for microphones.

We are pleased that you chose to purchase a TuneStudio, and we have designed it to give you many years of high-quality recording and mixing.

Have fun!

Key Features

- Record directly to your iPod in 16-bit, 44kHz digital audio quality
- Record to and from your PC or Mac computer using USB 1.1 or higher
- Instantly play back your recordings directly from your iPod
- Charge your iPod while recording
- 4-channel mixing console
- 3-band EQ, pan/balance and level controls to perfectly mix and enhance each channel
- 2 microphone inputs with optional phantom power and up to 60 dB of gain
- High-quality stereo compressor with gain control to keep the audio levels within the recording limits of the iPod and avoid clipping

Your TuneStudio combines multiple audio sources ("channels") into one stereo signal. You can use the following controls to enhance each channel's sound before it is mixed with the other channels:

- Level control to set the volume
- Pan (or "balance" for stereo channels) control to move the sound to the left or right
- Low, mid, and high EQs ("equalizers") to fine-tune the sound

Your TuneStudio also includes a compressor that can be used to enhance your recordings and keep the volume levels within the recording limits of the iPod.

What You Can Do with Your TuneStudio

- Record to or from an iPod
- Record to or from a computer
- Record from up to 5 audio sources
- Listen to your mix while recording, with studio monitors or headphones
- Play back your recordings from your iPod immediately after recording

What You Can Connect to Your TuneStudio

You can connect almost any instrument, microphone, or other audio device to your TuneStudio.
Your TuneStudio has inputs for four different types of cables: XLR, 1/4" TRS, RCA, and USB. With the right cables or audio connector adapters, you should be able to connect almost any audio source, including:

- CD players
- Computers
- Drum machines
- Guitars and bass guitars
- Microphones
- Synthesizers and keyboards

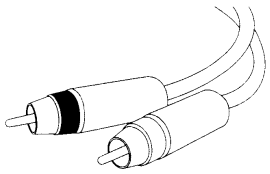
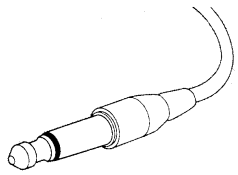
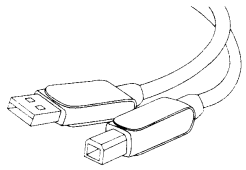
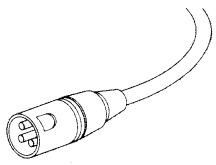
WHAT'S IN THE BOX

The following items should be in your TuneStudio box:

- TuneStudio
- CD with recording software
- 1/8" (3.5mm) to 1/4" (6.35mm) headphone cable adapter
- AC power supply and power cable
- Adapter inserts for iPod
- Warranty card
- This user guide

Cables You May Need

You will need the following cables to connect microphones ("mics"), instruments, and other devices to your TuneStudio:

Device	Cable Type	Example
Electronic audio sources (such as CD players)	RCA stereo	
Instruments	TRS 1/4"	
Computers	USB	
Microphones and high-end professional audio equipment	XLR	

iPod, WINDOWS, AND Mac COMPATIBILITY

iPod
iPod classic
80GB 160GB

iPod nano
3rd generation (video)
4GB 8GB

iPod
5th generation (video)
30GB 60GB 80GB

iPod nano
2nd generation (aluminum)
2GB 4GB 8GB

Windows
Pentium® II 350MHz (Pentium III 500MHz or faster recommended)
64MB RAM (128MB recommended)
Windows® XP or Windows Vista™
CD drive
USB 1.1 or USB 2.0 port (USB 2.0 recommended)

Macintosh
G3, G4, iMac, iBook, or PowerBook with native USB support
64MB RAM (128MB recommended)
CD drive
Mac OS X version 10.2.8 "Jaguar" or later

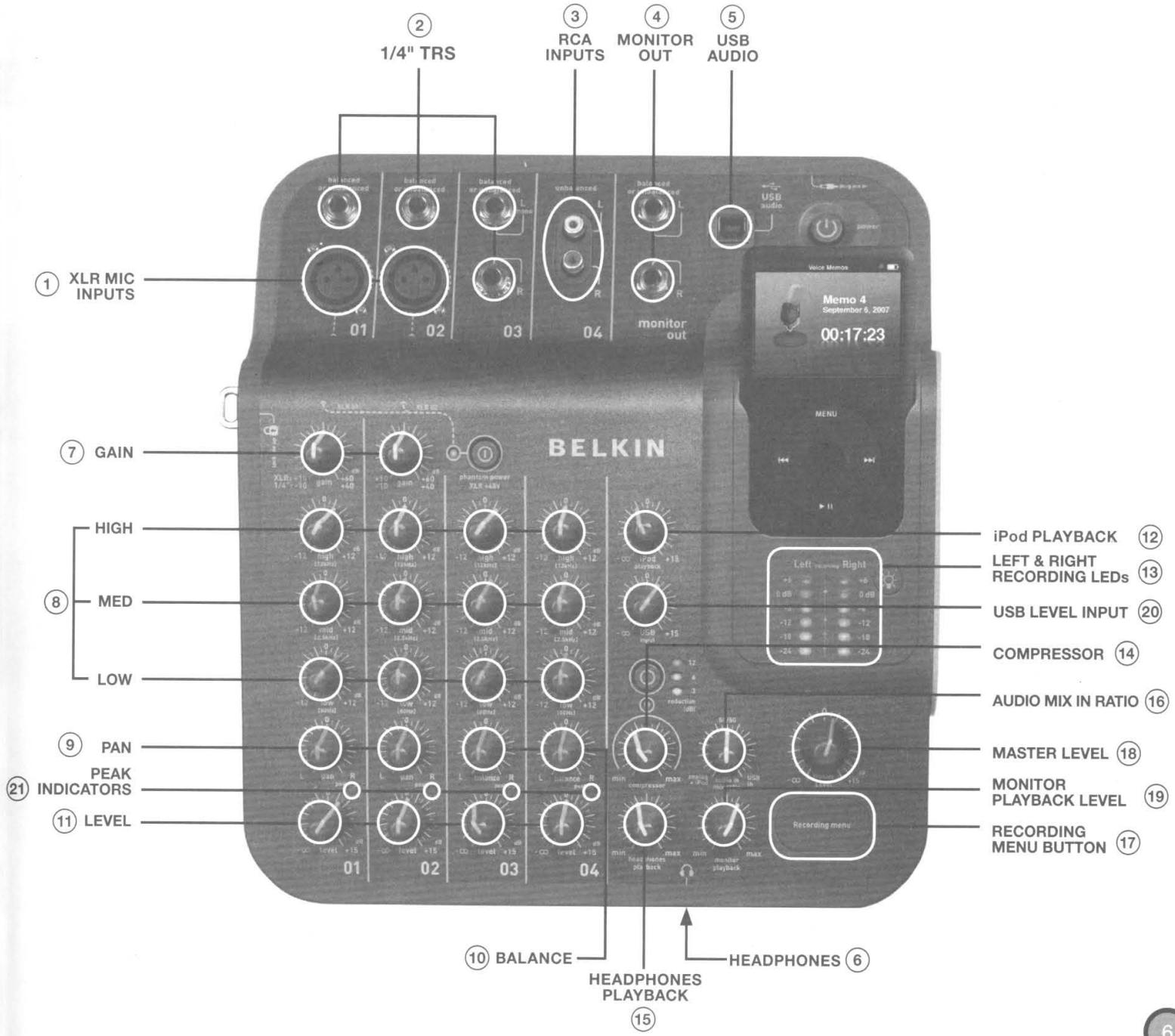
SETTING UP YOUR TUNESTUDIO

It only takes a few minutes to set up your TuneStudio and start recording.

To set up your TuneStudio:

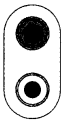
1. Verify all devices are turned off and all level controls are set to -∞ (completely to the left).
2. Connect the input sources.
3. Insert your iPod into your TuneStudio's iPod dock.
4. Connect the PC, studio monitors, and/or headphones.
5. Plug TuneStudio and other devices into AC power.
6. Turn everything on in the following order:
   - Input sources
   - TuneStudio (turning on your TuneStudio will turn on your iPod)
   - Studio monitors, headphones, and/or computer
7. When turning off, always turn off devices in the following order:
   - Studio monitors, headphones, and/or computer
   - TuneStudio
   - Input sources
8. Go to **www.belkin.com/registration** to register your TuneStudio.

Take a few minutes to learn how to use the inputs and controls on your TuneStudio.



TUNE**STUDIO TOUR**

You can use the inputs and outputs to connect instruments, mics, computers, speakers, and headphones to your TuneStudio.

Input/Output		Description
(1) **XLR Mic Inputs**		Inputs 1 and 2 provide XLR cable microphone inputs with optional phantom power for condenser mics. A condenser mic usually requires phantom power unless it has its own power source, such as a battery. Dynamic and ribbon mics don't usually require phantom power. Note: The phantom power button turns on phantom power for inputs 1 and 2. Always connect your microphones before turning on phantom power. Microphones are very sensitive, and a sudden power surge can damage a microphone. It's also a good idea to set the level control to -∞ before you turn on phantom power.
(2) **1/4" TRS Inputs**		Inputs 1–3 provide 1/4" TRS inputs for connecting guitars, bass guitars, synthesizers, drum machines, and other instruments. Channel 3 provides two TRS inputs. If you're connecting a mono input to Channel 3, connect it to the "Left/Mono" input.
(3) **RCA Inputs**		Input 4's RCA inputs can be used to connect electronic equipment such as a CD player or another iPod.
(4) **Monitor Out**		The monitor out connection can be used to connect studio monitor speakers. Studio monitors should have built-in amplifiers or be connected to an amplifier. You can control the studio monitors' volume with the monitor playback control.
(5) **USB Audio**		The USB connection can be used to connect your TuneStudio to a computer. You can control the computer's volume with the USB input control.
(6) **Headphones**		The headphones connection can be used to connect headphones. You can use the 1/8" (3.5mm) to 1/4" (7mm) headphone adapter to connect different types of headphones. You can control the headphone's volume with the headphones playback control.

You can use your TuneStudio's controls to fine-tune and monitor your recordings.

Control	Description
(7) **Gain (inputs 1 and 2)**	The gain control determines how much of the source signal is sent to the rest of the mix. If the gain is too high, the sound will be distorted. If the gain is too low, background hiss may be more noticeable. You can add up to 60 dB of gain to the XLR inputs and 40 dB of gain to the 1/4" TRS inputs.
(8) **High, Mid, Low EQs (inputs 1-4)**	The high, mid, and low equalizers ("EQs") can be used to increase ("boost") or decrease ("cut") the volume by up to 12 dB. The EQ settings can have a dramatic effect, so use them carefully. **High EQ (12kHz)** The high EQ can be increased to add crispness to cymbals, vocals, and string instruments or decreased to reduce microphone hiss. **Mid EQ (2.5kHz)** The mid EQ can be increased to make guitars, bass guitars, and pianos stronger or decreased to soften vocals. **Low EQ (80Hz)** The low EQ can be increased to add warmth to vocals or horns or extra punch to synthesizers, guitars, and drums. Decreasing the low EQ can reduce hum and add clarity to bass instruments. See "Equalizing (EQ) Tips" on page 19 for more information.
(9) **Pan (inputs 1 and 2)**	The pan control can be used to move a mono input to the left or right in the stereo spectrum.
(10) **Balance (inputs 3 and 4)**	The balance control can be used to control which part of a stereo input signal (left or right) is louder than the other. If a mono source is connected to input 3, then the balance control works like the pan control.
(11) **Level (inputs 1–4)**	The level control specifies how much of the source signal is sent to the mix. In the leftmost position, the volume is muted. In the rightmost position, the volume is increased by 15 dB.
(12) **iPod Playback**	The iPod playback control sets the volume when listening to your iPod. In the leftmost position, the volume is muted. In the rightmost position, the volume is increased by 15 dB.
(13) **USB Input Level**	The USB level control specifies how much of the signal is sent to the mix. In the leftmost position, the signal is not sent to the mix. In the rightmost position, the signal is increased by 15 dB.

Control	Description
⑭ **Compressor**	The compressor can be used to enhance your recordings and keep the volume levels within the recording limits of the iPod. With the compressor, you can make softer sounds louder without making louder sounds too loud. It is especially useful when recording vocals and instruments together. The three LEDs to the right of the compressor button indicate how many decibels (dBs) of compression are being applied.
⑮ **Headphones Playback**	**The headphones playback control can be used to set the volume for the headphones.** **Note: The headphones input is on the side of your TuneStudio under the headphones playback control.**
⑯ **Audio In Mix Ratio**	The audio in mix ratio specifies how signals from input sources 1–4 and the USB input are mixed together. For example, turning the control to the left will increase the volume of input 1–4 sources and decrease the volume of the USB source. Turning the control completely to the left or right will mute the other source.
⑰ **Monitor Playback Level**	**The monitor playback control can be used to set the volume of the studio monitor speakers.**
⑱ **Master Level**	The master level control sets the recording volume level to the iPod. In the leftmost position, the volume is muted. In the rightmost position, the volume is increased by 15 dB.
⑲ **Recording Menu Button**	**The Recording Menu button can be used to open the Recording menu on the iPod 5th generation (video) only. Note that this button does not work with the iPod nano 3rd generation (video) or iPod classic.**
⑳ **Left and Right Recording LEDs**	The recording LED lights tell you if the volume is too low or too high. You can adjust the volume using each input's level control or the full mix using the master level control.
㉑ **Peak Indicators**	**Each input channel has a peak indicator near its level control. The peak indicator lights up when the audio signal level is too high and may be causing distortion. If a peak indicator lights up, you should adjust your settings until the peak indicator stays off. These are the most likely solutions:** • **For inputs 1 and 2, try turning down the gain control or moving your microphone further away from the source.** • **If you have any of the EQ controls turned up high, turn them down a little.** • **Turn down the volume of the audio source.**

SETTING THE RECORDING LEVEL

Setting the recording level will help you create clear, distortion-free recordings.

You should set the recording level for each channel that you're using.

To set the recording level:

1. If you're using input 1 or 2, set the "Gain" control completely to the left.
2. Set the "Low", "Mid", and "High" EQ controls to 0.
3. Set the "Pan" control to 0.
4. Set the "Level" control to -∞.
5. Connect the microphone or instrument cable to the channel's input.
6. Set the "iPod Playback" control to 0.
7. Set the "Master Level" control to 0.
8. Play the instrument or electronic device at a normal level and slowly increase the channel's gain until the left and right recording level LEDs are continuously red (0 dB).
9. Slowly reduce the channel's gain until the red 0 dB LEDs no longer light up when you play the instrument or device.
10. Adjust the low, mid, and/or high EQs, then check the red 0 dB LEDs to verify they don't light up.
11. If any of the red recording level LEDs lights up while you're recording, your recording could be distorted. Keep an eye on the LEDs and adjust your levels as necessary.
12. If it's difficult to control the level of your audio source, especially if you're working with microphones or multiple audio sources, experiment with the compressor to keep the levels in check. The compressor looks for sudden increases in volume and reduces the audio levels very quickly to keep the signals from exceeding the recording level limits.

RECORDING WITH MICROPHONES

Read on to learn how to select and place a mic when recording.

Using a well-placed microphone will drastically improve your sound quality. You should experiment with microphone placement to find the best location.

Types of Microphones

There are two types of microphones: condenser and dynamic.

Condenser Microphones

Condenser (or "capacitor") microphones are usually used for live recordings. Unless they have their own power supply, such as a battery, condenser mics use the phantom power from your TuneStudio to power their amplifiers and impedance converters. There are many types of condenser mics, including headworn, lavalier, probe, shotgun, and side-address.

Condenser mics are very sensitive, so they work well with distant or soft sources. They are often used to record acoustic instruments and vocals.

Dynamic Microphones

Dynamic (or "moving-coil") microphones are usually less expensive and less sensitive than condenser microphones. Because they don't have amplifiers, dynamic mics don't need phantom power. Phantom power should not harm a dynamic mic, but you should turn off phantom power before connecting a dynamic mic.

Older dynamic mics have low sensitivities and require a high gain setting. Ribbon mics (a type of dynamic microphone) normally have very low sensitivity and usually require a very high gain setting. They are often used to record guitars and drums.

Recording with Multiple Microphones

Your TuneStudio can record up to four sources at a time, and input channels 1 and 2 can provide phantom power for two mics. If you are recording with multiple mics, you should follow the 3:1 rule.

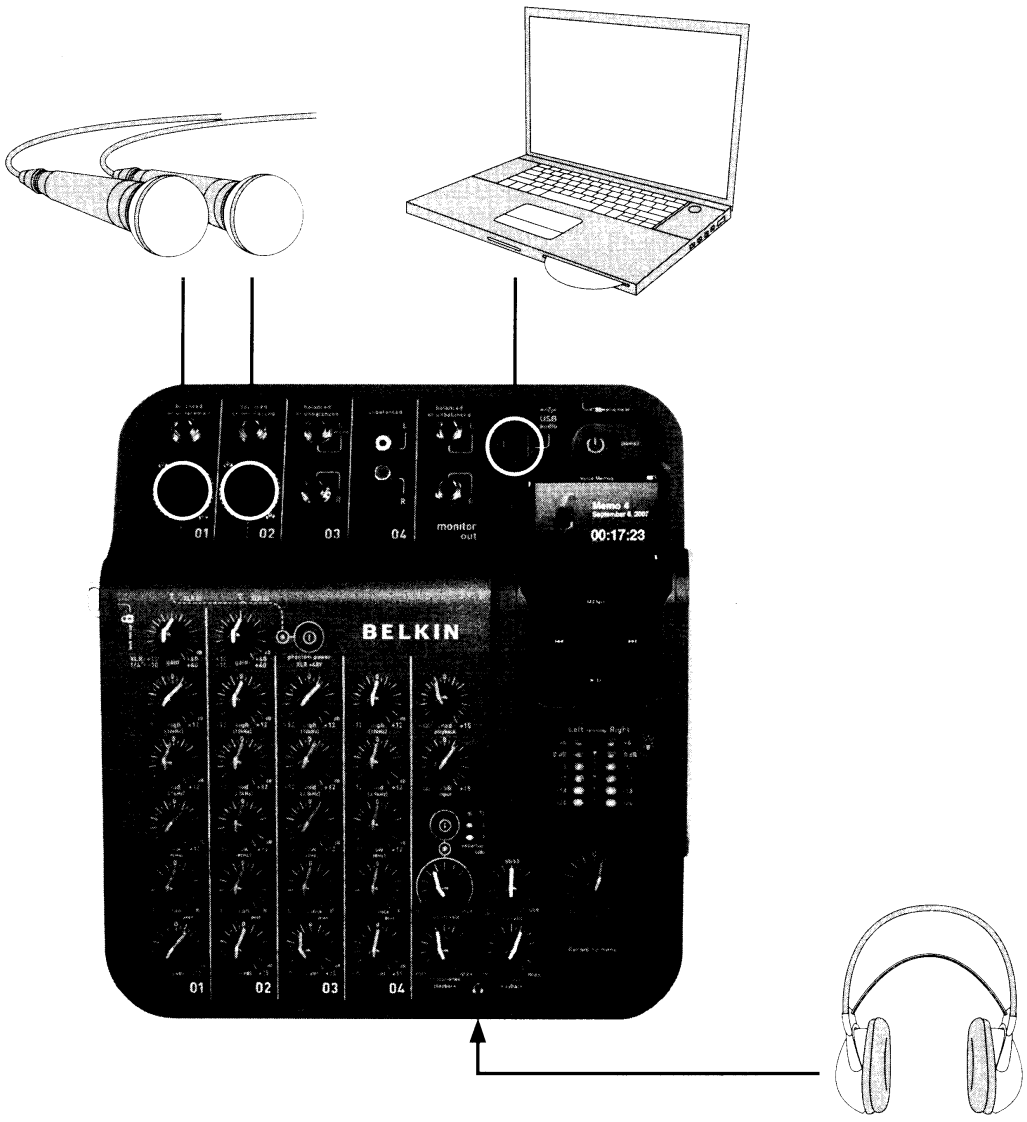
3:1 Microphone Placement Rule

When you record with multiple mics, sounds arrive at each mic at different times. Sounds farther from the mic will have a slight delay. When you combine the close and distant sounds, some frequencies will cancel each other out. The result is a "hollow" or filtered sound.

To avoid this problem, the distance between your mics should be three times the distance between the mics and their source. For example, if your mics are one foot from the source, they should be placed at least three feet apart.

RECORDING A PODCAST

The diagram below shows a typical 2-mic setup for recording a podcast. You can connect an iPod or a computer to include background music.



RECORDING A PODCAST

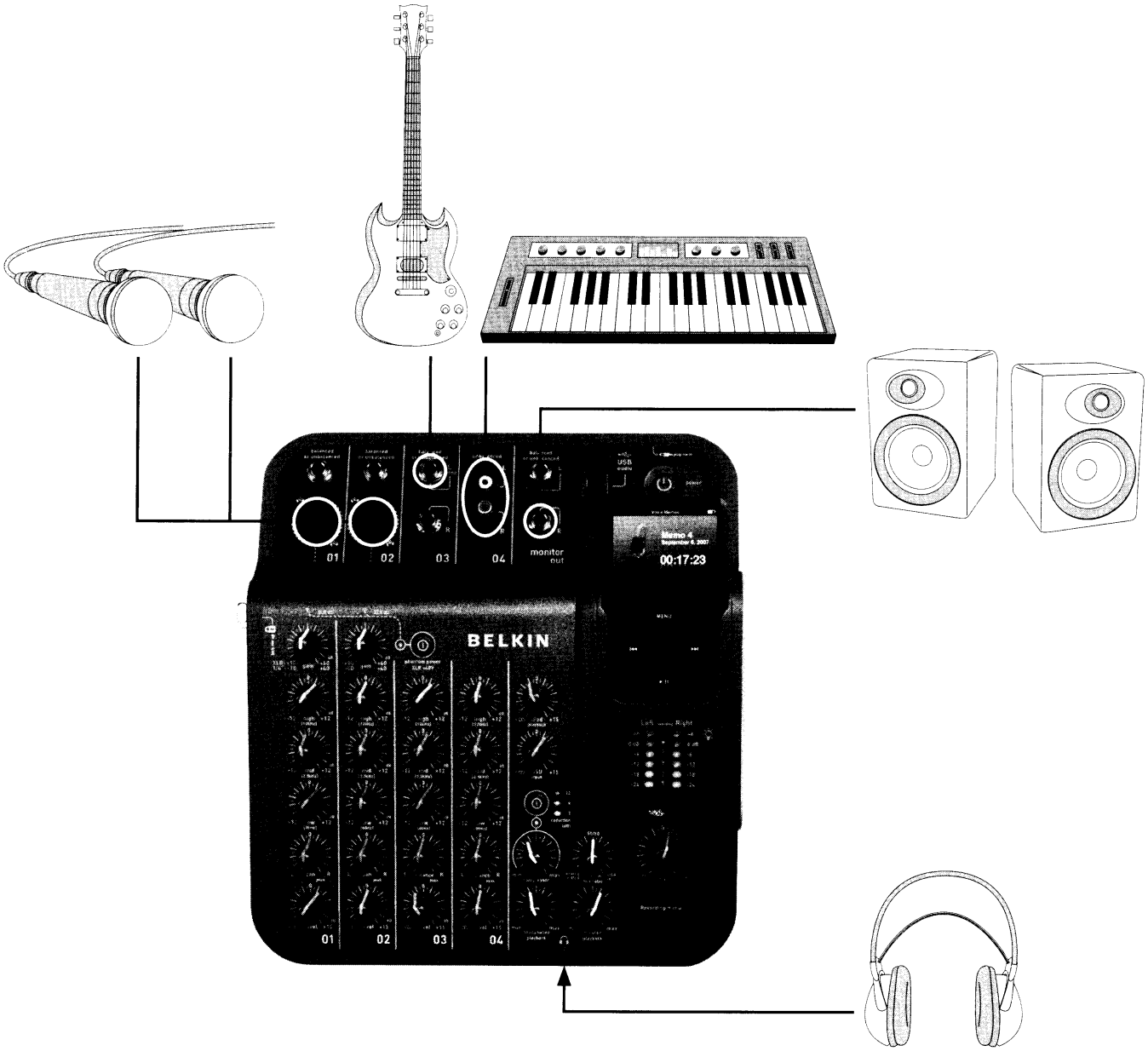
Tips for Recording a Podcast

You will become much more comfortable and adept at recording podcasts after you have done it a few times. Here are some tips to help you get started:

- Test the recording level before recording. The left and right recording level LEDs should not be constantly red (0 dB). If the 0 dB LED is constantly lit, the "peaks" of the recording may be clipped and the sound quality will usually be poor.
- Use a well-placed, high-quality mic. Lavalier mics often work well for podcasts because they're small and can be clipped to your clothing.
- If you are not using a lavalier mic, be careful not to move too close to or far away from the mic.
- Position your mic about six inches from your mouth (or at an angle) so that it doesn't capture your breathing. Remember, you can connect headphones to your TuneStudio to test different mic positions and distances.
- Speak in your normal voice at a conversational level. Don't be too self-conscious about your voice—most people don't like the sound of their voice when they first hear it in a recording. Just be sure to speak clearly.
- If you are recording an interview with one mic, try using a "figure eight" type mic and have your interviewee sit directly across from you. A figure eight mic is two sided, so it can capture sounds directly in front and directly behind.
- Use the level controls to fade-in the beginning of your podcast and fade-out the end.
- Include background music during the podcast, with several seconds of music at the beginning and end of your podcast. Make sure you have permission to use the music.

RECORDING LIVE MUSIC

The diagram below shows a typical setup for recording live music. You can connect different instruments as needed. For example, you can connect a drum machine instead of a second mic.



RECORDING LIVE MUSIC

Tips for Recording Acoustic Instruments

Acoustic instruments can be difficult to record. Here are a few tips to improve your acoustic guitar recordings:

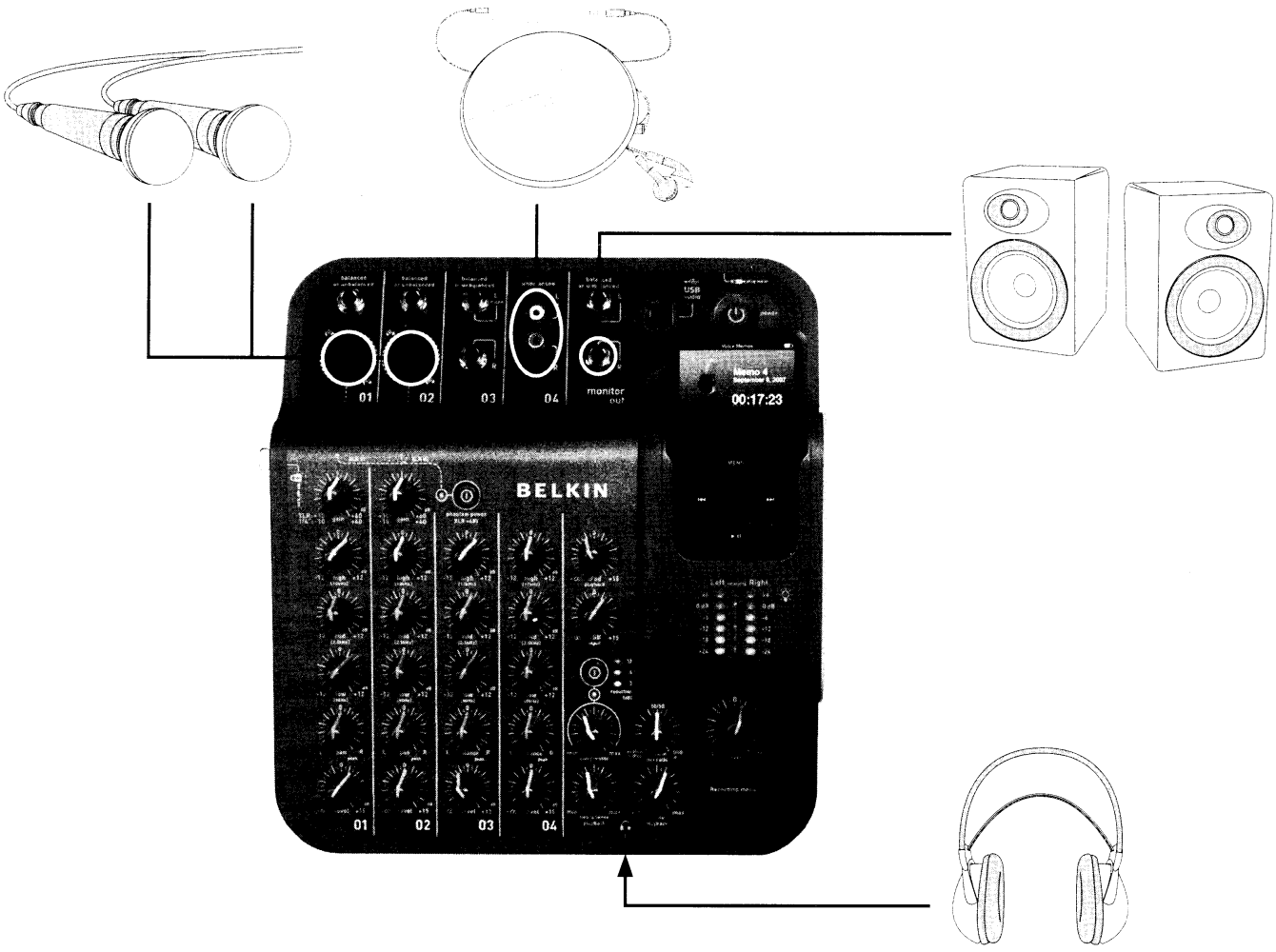
- Record in a highly acoustic room, such as a room with a wooden or tile floor.
- Use a condenser microphone ("mic"). It can capture softer instruments better than a dynamic mic.
- Try positioning the mic about 24 inches from the instrument.
- Use multiple mics, and experiment with different angles and placements. For example, position two mics at 90-degree angles and use the pan controls to move one mic to the left side of the mix and the other mic to the right. This approach can create a very engaging stereo effect.
- For acoustic guitars, try placing one mic 1–6 inches from the sound hole. You will probably need to reduce the low EQ control with this approach.

Tips for Recording Electrical Instruments

- **Guitar –** For a live sound, try recording with two mics. Point one mic directly into the guitar's monitor speaker and the other mic about five or six feet from the speaker.
- **Bass Guitar –** If possible, connect the bass guitar to a direct injection ("DI") box and connect the DI box to your TuneStudio. A DI box will eliminate hum in your recordings.
- **Keyboards –** Record directly to your TuneStudio for clarity and with a mic (set to lower volume) for a live sound.

RECORDING A CHOIR

The diagram below shows a typical setup for recording a choir. You can connect an iPod or CD player to include background music.

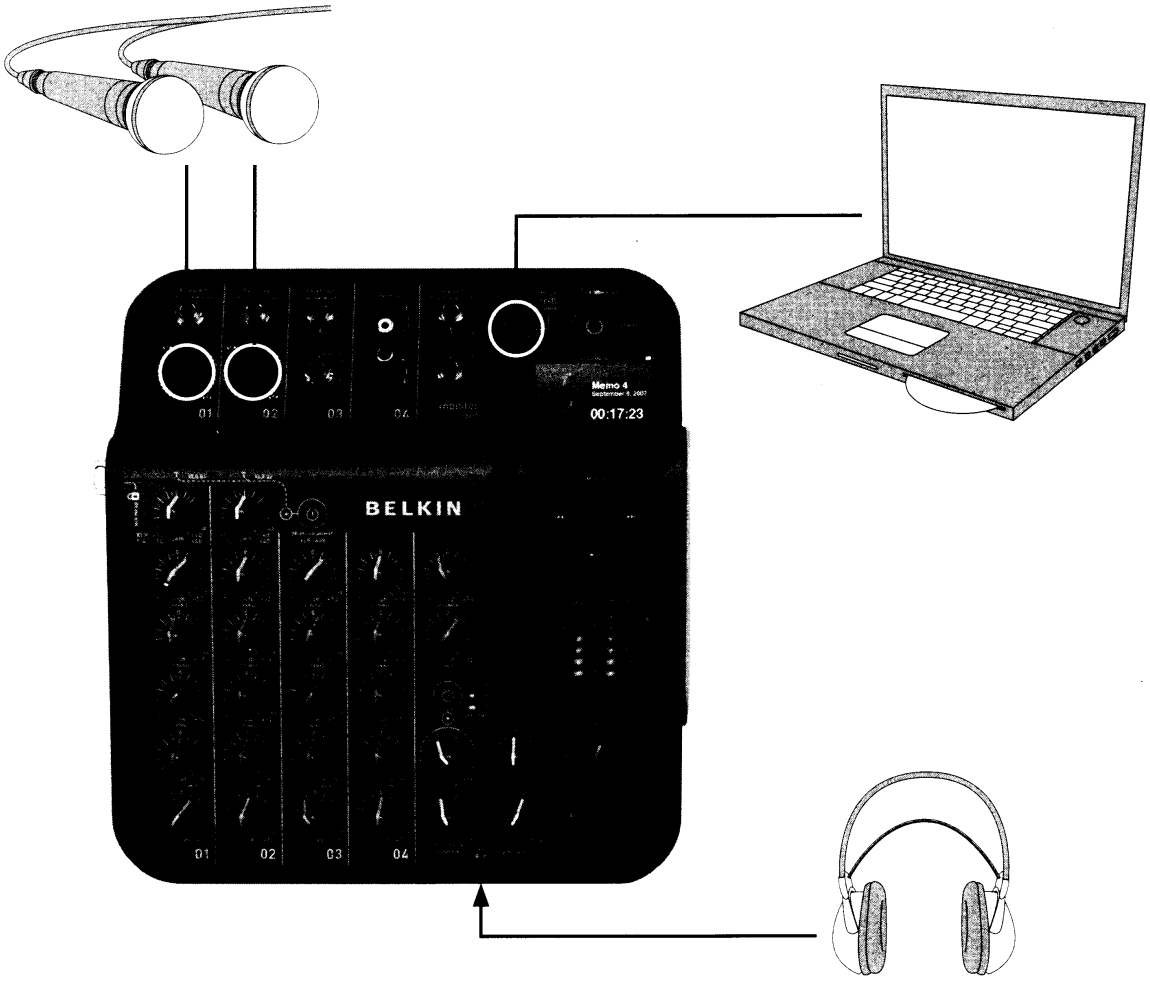


Tips for Recording a Choir

- Use a condenser mic for recording vocalists. They usually work better than dynamic mics for vocals.
- Use multiple mics. If possible, place them above the choir and aimed down.
- Try positioning two mics in the middle and aim them toward the vocalists in the back corners. Place the mics least three times the distance from each other as from the vocalists.
- Try using an omnidirectional mic. It will capture both the choir and the sound resonating in the room.

RECORDING TO OR FROM A COMPUTER

The diagram below shows a typical setup for recording to a computer.



Tips for Recording to or from a Computer

You'll need to select your TuneStudio as your input and output audio device to record audio to or from a Mac computer or Windows PC.

To record to or from a Mac computer:

1 Connect your TuneStudio to your Mac computer's USB port.

2 Select "System Preferences" from the Apple menu.

3 Select the "Sound" preference pane.

4 Click the "Output" tab.

5 Select "USB Audio Codec" as your default input and output device.

To record to or from a Windows PC:

1 Connect your TuneStudio to your Windows USB port.

2 Select "Settings > Control Panel" from the Start menu.

3 Double-click "Sounds and Audio Devices".

4 Click the "Audio" tab.

5 Select your TuneStudio as the default "Sound playback" and "Sound recording" device.

6 For best audio quality, select the "Volume" tab and set the "Device volume" to "High."

EQUALIZING (EQ) TIPS

The following EQ tips will help you create high-quality recordings.

The high, mid, and low EQs can be used to increase or decrease the volume of your source inputs by up to 12 dB at the following levels:

Low: 80Hz

Mid: 2.5kHz

High: 12kHz

The following table provides tips for recording different instruments and vocals. These tips are recommended starting points—you should experiment to find the best settings for your instrument and environment. If you need to make large adjustments, try to adjust your microphones rather than the EQ settings.

Note: "Boost" means to increase the setting, and "cut" means to decrease the setting.

Source	Low (80Hz)	Mid (2.5kHz)	High (12kHz)
Conversations	Slight cut		
Vocals			Slight cut
Cymbals	Cut	Slight boost	
Snare drums	Slight cut	Slight cut	Slight boost
Kick/bass drums	Slight boost	Slight cut	
Toms		Cut	
Bass guitars	Cut	Boost	
Guitars	Cut		
Pianos and keyboards	Cut		

MIXING TIPS

The following tips will help you produce the best mix possible.

- Listen to commercial recordings through your TuneStudio using a studio monitor or headphones to develop a sound reference.
- Don't pan kick drums or bass instruments to the left or right. These "high energy" sounds should be shared equally between the speakers for best results.
- Don't vary the level of drums or bass guitars. These instruments provide a foundation for other instruments.
- If you record multiple inputs, make your final EQ adjustments to the full mix. A single input will often sound different when heard by itself.
- Avoid making large EQ adjustments. Your recording will sound more natural if you adjust the mics rather than the EQ settings.
- Experiment with the compressor setting. Set the compressor below 30 percent for subtle compression and to smooth out some of the audio peaks. Try a higher compression setting to achieve higher "loudness" or for an interesting audio effect.
- Keep the studio monitor or headphone volume low or, at most, at a normal listening level. A high volume can cause hearing damage, and you should always mix at the level you think the recording will be played. If needed, you can check the mix at a higher volume for short periods.
- Check your mix on headphones and studio monitors. "Studio" headphones that completely isolate your ears can help you find small distortions and clicks that you may not hear through speakers. Studio monitors can help you fine-tune bass sounds.
- Listen to your finished mix the day after you've finished it. Your perception is likely to change after resting your ears overnight. Also, check the master recording on different sound systems to ensure it sounds OK.

LISTENING TO A RECORDING

Your recordings are saved as voice memos on your iPod. Each recording is an uncompressed WAV file, and the file name is the recording's date and time.

To listen to a recording:

- Select "Extras > Voice Memos" on the iPod.
- Select the recording and press "Play".

Recordings that have been imported into iTunes (see below) can be found in the Voice Memos playlist on your iPod. Select "Music > Playlists > Voice Memos".

Copying a Recording to Your Computer

If your iPod is set to automatically update (or "sync") songs and playlists, your recordings will be copied to your computer when you connect your iPod. If iTunes is not set to sync songs and playlists with your iPod, iTunes will ask you if you'd like to copy your new voice memos when you connect your iPod to your computer.

Keep in mind that your recent recordings will be moved from your Voice Memos menu on your iPod to the Voice Memos playlist once you've imported them into iTunes. To open the Voice Memos playlist, select "Music > Playlists > Voice Memos".

If you prefer the drag-and-drop approach, which may be more useful if you plan to work with your recordings using other audio software, you must first choose to "Manually manage music and videos" for your iPod within iTunes. This will also automatically "Enable disk use" for your iPod, which is what you want. Then, select "No" when iTunes asks if you'd like it to import your recent voice memos each time you dock your iPod. Instead, you can manage your recordings through Windows Explorer (PC) or Finder (Mac). Your recordings are regular WAV files, so you can treat them as you would any other WAV file.

On a Windows PC, your iPod will appear in the list of drives when you click "My Computer" on your desktop. On a Mac, your iPod should appear in the Finder or on your desktop. Your recordings will be in the "Recordings" folder. Each recording's file name includes the date and time of the recording.

PROTECTING YOUR HEARING

As with any sound recording or listening device, you should be careful to protect your hearing when using your TuneStudio.

Following these sound-level recommendations can minimize your risk of hearing damage. Remember, the longer you listen, the lower the volume should be.

Hours per day	Max sound level (dB)	Sample sound
8	90	
4	95	Typical portable stereo at half volume
2	100	
1	105	Typical portable stereo at maximum volume
0.5	110	Rock concert
<0.25	115	

This information is based on guidelines provided by the United States Occupational Safety & Health Administration (OSHA) and the National Institute on Deafness and Other Communication Disorders.

TROUBLESHOOTING

Most problems with your TuneStudio can be solved quickly by following the advice in this chapter.

If you continue to have trouble, contact Belkin Customer Service at 800-223-5546 ext. 2263 or on the web at **http://www.belkin.com/support.**

If the Recording Menu button doesn't work:

- Make sure you're using an iPod 5th generation (video). This button does not work with the iPod classic.
- If you are using the iPod classic, simply navigate to the "Voice Memo" menu on the iPod itself.

If your TuneStudio won't turn on:

- Make sure you're using the supplied 12V 1.25A power adapter.
- Try using another power outlet.

If you don't hear anything in the studio monitors or headphones:

- Make sure your TuneStudio is plugged in and turned on.
- Make sure the cables are securely connected.
- Verify your source is playing.
- Turn up the level control(s).

If these suggestions don't help, you might have a bad cable. Check all of your cables and try replacing them with known good ones.

If the microphone volume is too low:

- Make sure the cables are securely connected.
- If you are using a condenser mic, try turning on phantom power.
- If the microphone is connected to channel 1 or 2, turn up the gain control.

If an instrument's volume is too low:

- Make sure the cables are securely connected.
- Turn up the instrument's volume. If the volume is still too low, check the instrument by connecting your headphones to the instrument.
- Adjust the channel's level control.

If the sound is distorted:

If the left or right +6 dB recording level LED lights up:

- Turn down the volume on your instrument.
- Turn down the channel's level control.
- Turn down the master recording level control.

If you hear a "hum" sound in the recording:

- If you're using a condenser microphone, try turning on phantom power and increase the level control.
- If you're recording an instrument, turn up the instrument's volume control.
- Try connecting your instrument, TuneStudio, and computer to a grounded power strip.

If your recordings are only in the left channel:

- Make sure your iPod is configured to record in "High Quality" mode. On your iPod, select "Extras > Voice Memos" and set Quality to "High". Your TuneStudio will not work correctly with Quality set to "Low".
- Check your cable connections.
- Make sure that your pan and balance controls are not set all the way to the left.

If your computer doesn't see your TuneStudio:

- Make sure the USB cable is securely connected.
- Unplug the USB cable and turn off your TuneStudio. Then, turn your TuneStudio on and reconnect the USB cable. If this doesn't work, leave your TuneStudio on and restart your computer.
- Make sure the TuneStudio is selected as an audio output device. See page 18.

TUNE**STUDIO SPECIFICATIONS**

General Channel Performance (Channels 1–4, iPod Playback)

Specification	Value	Notes
THD	0.004%	
THD+N	0.008%	
Frequency Response	±0.5 dB, 20Hz–20kHz	
Signal to Noise Ratio	90 dB, 92 dB (A-weighted)	Signal at 0 dB (0 dBV)
Level Fader Cutoff	80 dB	Difference in output level with channel level control set to –inf then +15 dB

Specific I/O Performance and Characteristics

CH1 and CH2 XLR Microphone Inputs

Specification	Value	Notes
EIN (Equivalent Input Noise)	121 dB, -123 dB (A-weighted)	Mic gain +60 dB, 150-Ohm source impedance
Max Input Level	600mVrms (-2.6 dBu)	Mic gain at +10 dB
Input Impedance	4kΩ balanced	

CH1 and CH2 1/4" TRS Inputs

Specification	Value	Notes
Max Input Level, Balanced	4.4Vrms (+15.1 dBu)	Mic gain at -10 dB
Max Input Level, Unbalanced	8.8Vrms (+21.1 dBu)	Mic gain at -10 dB
Input Impedance	20kΩ unbalanced, 28kΩ balanced	

CH3 1/4" TSR Inputs

Specification	Value	Notes
Max Input Level, Balanced	2.1Vrms (+8.6 dBu)	
Max Input Level, Unbalanced	4.2Vrms (+14.6 dBu)	
Input Impedance	20kΩ unbalanced, 40kΩ balanced	

CH4 RCA Inputs

Specification	Value	Notes
Max Input Level	5.4Vrms (+16.9 dBu)	
Input Impedance	22kΩ	

USB Output (from TuneStudio to Computer)

Specification	Value	Notes
SNR, 44.1kHz, 16-bit	81 dB, 84 dB (A-weighed)	
SNR, 48kHz, 16-bit	84 dB, 87 dB (A-weighted)	
Stereo Separation	> 80 dB	
THD+N	0.03%	
Frequency Response	±1 dB, 20Hz–20kHz	

USB Input (from Computer to TuneStudio)

Specification	Value	Notes
Signal to Noise Ratio	83 dB	USB mix control set to 100% USB
Stereo Separation	> 80 dB	
THD+N	0.007%	
Frequency Response	±1 dB, 20Hz–20kHz	
Level Fader Cutoff	80 dB	Difference in output level with channel level control set to -inf then +15 dB

LEARNING MORE

Want to learn more about recording audio, mixing, or creating podcasts?

The following table provides some recommended websites and books.

References to Third-Party Information: Belkin provides references to third-party information for your convenience. The inclusion of any such references does not imply Belkin's endorsement of the info. The referenced media are not under Belkin's control and Belkin is not responsible for the content of any such publication or any link contained in such site.

To learn about...	Check out...
TuneStudio	www.belkin.com/tunestudio
Recording Audio	"Audio Recording Tips" - www.pcmus.com/AudioTips.htm "Audio Mixing Tutorial" - www.garritan.com/tutorial/AudioMixing.htm *Sound Advice on Recording and Mixing Vocals* by Bill Gibson *101 Recording Tips: Stuff All the Pros Know and Use* by Adam St. Jam
Mixing	*The Mixing Engineer's Handbook* by Bobby Owsinski *Mixing, Recording and Producing Techniques of the Pros* by Rick Clark
Podcasting	"Make Your First Podcast" - www.podcastingnews.com/articles/How-to-Podcast.html "Create Your Own Podcast" - reviews.cnet.com/4520-11293_7-6246557-1.html Podcasting Tutorials - www.podcast411.com *Tricks of the Podcasting Masters* by Rob Walch *Promoting Your Podcast: The Ultimate Guide to Building an Audience of Raving Fans* by Jason Van Orden

GLOSSARY

The following terms are often used when recording and mixing audio.

Balance: The relative volume levels of the left and right channels of a stereo signal.

Boost: An increase in volume, especially at higher frequencies.

Clipping: Severe distortion that occurs when the peak signal's voltage is limited by the power supply's voltage.

Cut: A reduction in volume, especially at lower frequencies.

dB (decibel): A measurement for the "loudness" of a sound.

Distortion: An undesired sound caused by a difference between the input and output of an audio signal.

Feedback: The "howling" sound caused when a microphone is positioned too close to a speaker.

Gain: The amount of amplification in a signal.

Monitor: A speaker that is used to listen to and evaluate a recording. Also called a "studio monitor."

Pan ("panorama"): Pan controls are used to set the sound levels for the left and right outputs. They are sometimes called "balance" controls.

RCA ("Radio Corporation of America"): RCA cables are used to transmit analog audio and composite video signals. Stereo RCA cables have two connectors: red (right) and white or black (left). A yellow connector on an RCA cable is used for composite video. RCA cables are named after the Radio Corporation of America (RCA). RCA invented these cables in the early 1940s to connect turntables to amplifiers.

TRS ("Tip-Ring-Sleeve"): TRS cables are usually used to connect mono, not stereo, sources, or headphones.

USB ("Universal Serial Bus"): USB cables are used to connect devices to computers. They can be connected without turning the computer off.

XLR: XLR cables are usually used to connect a microphone. The name "XLR" is from the original name of the cable, the Cannon X series. Later versions added a latch ("L") and then a rubber compound ("R") around the contacts.

INFORMATION

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada-Industry Canada (IC)

The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital apparatus complies with Canadian ICES-003.
B02184

Belkin International, Inc., Limited 1-Year Product Warranty

What this warranty covers.
Belkin International, Inc. ("Belkin") warrants to the original purchaser of this Belkin product that the product shall be free of defects in design, assembly, material, or workmanship.

What the period of coverage is.
Belkin warrants the Belkin product for one year.

What will we do to correct problems?
Product Warranty.
Belkin will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product).

What is not covered by this warranty?
All above warranties are null and void if the Belkin product is not provided to Belkin for inspection upon Belkin's request at the sole expense of the purchaser, or if Belkin determines that the Belkin product has been improperly installed, altered in any way, or tampered with. The Belkin Product Warranty does not protect against acts of God such as flood, earthquake, lightning, war, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances (i.e. brownouts or sags), non-authorized program, or system equipment modification or alteration.

How to get service.
To get service for your Belkin product you must take the following steps:

1 Contact Belkin International, Inc., at 501 W. Walnut St., Compton CA 90220, Attn: Customer Service, or call (800)-223-5546, within 15 days of the Occurrence. Be prepared to provide the following information:
   - The part number of the Belkin product.
   - Where you purchased the product.
   - When you purchased the product.
   - Copy of original receipt.

2 Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

INFORMATION

Belkin reserves the right to review the damaged Belkin product. All costs of shipping the Belkin product to Belkin for inspection shall be borne solely by the purchaser. If Belkin determines, in its sole discretion, that it is impractical to ship the damaged equipment to Belkin, Belkin may designate, in its sole discretion, an equipment repair facility to inspect and estimate the cost to repair such equipment. The cost, if any, of shipping the equipment to and from such repair facility and of such estimate shall be borne solely by the purchaser. Damaged equipment must remain available for inspection until the claim is finalized. Whenever claims are settled, Belkin reserves the right to be subrogated under any existing insurance policies the purchaser may have.

How state law relates to the warranty.
THIS WARRANTY CONTAINS THE SOLE WARRANTY OF BELKIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR, EXCEPT AS REQUIRED BY LAW, IMPLIED, INCLUDING THE IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SUCH IMPLIED WARRANTIES, IF ANY, ARE LIMITED IN DURATION TO THE TERM OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

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This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion or limitation of incidental, consequential, or other damages, so the above limitations may not apply to you.

NOTES

Belkin Tech Support
US: 800-223-5546, ext. 2263
310-898-1100, ext. 2263
UK: 0845 607 77 87
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New Zealand: 0800 235 546
Singapore: 65 64857620
Europe: www.belkin.com/support

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Installation CD

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TuneStudio™

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This CD contains your free copy of Cakewalk Music Creator™ LE, to help you get started with recording and editing your sound creations from your Belkin TuneStudio. Simply insert this disk in your PC's CD drive, and follow the on-screen instructions to install the software.

The disk also contains the software manual and information about other Cakewalk® products.

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